END USE OF CANADIAN WOOD PRODUCTS

A study of patterns of utilization and economic impact of wood processing

by Stefan S. Bandrowski

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STEFAN S. BANDROWSKI

Résumé en français

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Abstract

The overall purpose of this study is to trace the flows of wood products from their primary state as unharvested trees to their disappearance points - either as material inputs for further production or as finished products destined for final consumption. The study is divided into two parts. The first part contains a description of the physical flows of wood through various stages of transformation which are conveniently grouped into three manufacturing levels. Each is differentiated by a progressively greater value added factor of labor and capital. The first part also includes an analysis of the impact sequences generated by these flows, measured in terms of number of plants and workers employed in the manufacturing process.

The second part centers around the patterns of use of lumber and plywood and their importance to domestic industrial users throughout the 1961-1971 study period. Emphasis is placed on detection and analysis of significant trends in the relative distribution of wood products between various domestic industrial uses and exports.

Résumé

Le but d'ensemble de la présente étude est de tracer les cheminements des produits du bois, à partir de leur état naturel, soit des arbres sur pied, jusqu'à la transformation complète du matériau initial en passant par la production, ou des produits finis voués à la consommation. L'auteur divise l'étude en deux parties. La première partie décrit les cheminements physiques du bois à travers les diverses étapes de la transformation, étapes groupées de façon pratique en trois niveaux de fabrication. Chacune est différenciée par un facteur progressif de plus grande valeur, relié à la main-d'oeuvre et au capital investi. La première partie comprend aussi une analyse des séquences d'influence générées par ces cheminements, mesurées selon le nombre d'usines et de travailleurs requis pour la fabrication.

La seconde partie converge autour des genres d'utilisation du bois d'oeuvre et du contreplaqué, puis de leur importance vis-à-vis les utilisateurs dans l'industrie au pays au cours de la période d'étude de 1961 à 1971. L'auteur met l'accent sur la détection et l'analyse des tendances significatives dans la distribution relative des produits du bois observées parmi diverses utilisations industrielles au pays et parmi diverses exportations.

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INTRODUCTION

To analytically assess the importance of the renewable forest resource within the context of the national economy, one of the following approaches can be utilized: (a) describe all of the contributions of the forest, including non-quantifiable ones, or (b) identify the different structures and activities of the various wood manufacturing industries.

Since the purpose of this study is to trace the flows of wood products from their primary state as unharvested trees to their final end use, the second choice seems to be more appropriate. This approach requires classification of the various wood processing industries into fairly homogeneous structural groups and measuring the contributions of such groups in economic terms. Thus one can readily distinguish primary forest industries like logging and secondary industries such as sawmills, veneer and plywood mills and pulp and paper mills. Some tertiary level industries would include furniture, millwork (windows and doors), and specially paper manufacture, since their raw material inputs come predominantly from the secondary level industries.

To actually measure the contribution of wood products to the economy, one of the two coefficients derived from input-output tables can be used. One coefficient is the ratio of purchased inputs to total production of the forestry sector, indicating indirect use of capital and labour in the productive process. The other coefficient is the ratio of intermediate to total demand, showing how much of the sector's output is sold for further use in production. The comparison of these ratios with the average for the whole economy can be regarded as the relative contribution of the sector.

The necessary prerequisite to this measuring process is to trace out the flows of wood products from point of origin to final destination. This is an arduous task because of lack of data and the difficulty in selecting the meaningful flow-intercepting points. The end use flow chart (Figure 1) presenting the principal directions of such flows and their importance to the user-industries therefore should be regarded as only a broad approximation rather than a quantitatively precise network of relationships.

PROFILE OF FLOWS

One third of the total land area in Canada is forested - an enormous area surpassed only by that of the USSR. However, as much as one half of it is located more than 75 miles from timber-processing centers and is therefore presently economically inaccessible. According to the 1973 National Forest Inventory, 66% of the forest land is under provincial jurisdiction, 27% constitutes federal Crown forest while the remaining 7% is private land. Topography varies from relatively flat or gently rolling uplands with low hills in the East to the steep slopes and deep valleys of the mountainous regions of the West. The estimated amount of merchantable timber is 673 billion cubic feet (19 billion m^3), four fifths being softwoods (Figure 1).

In 1973, timber procured from private land amounted to 183 million cubic feet (5.2 billion m^3), mostly cut in Quebec, Ontario and the Atlantic Provinces. This volume varies slightly from year to year. Most of the sawlogs and pulpwood are utilized locally.

FIGURE 1 END USE OF WOOD

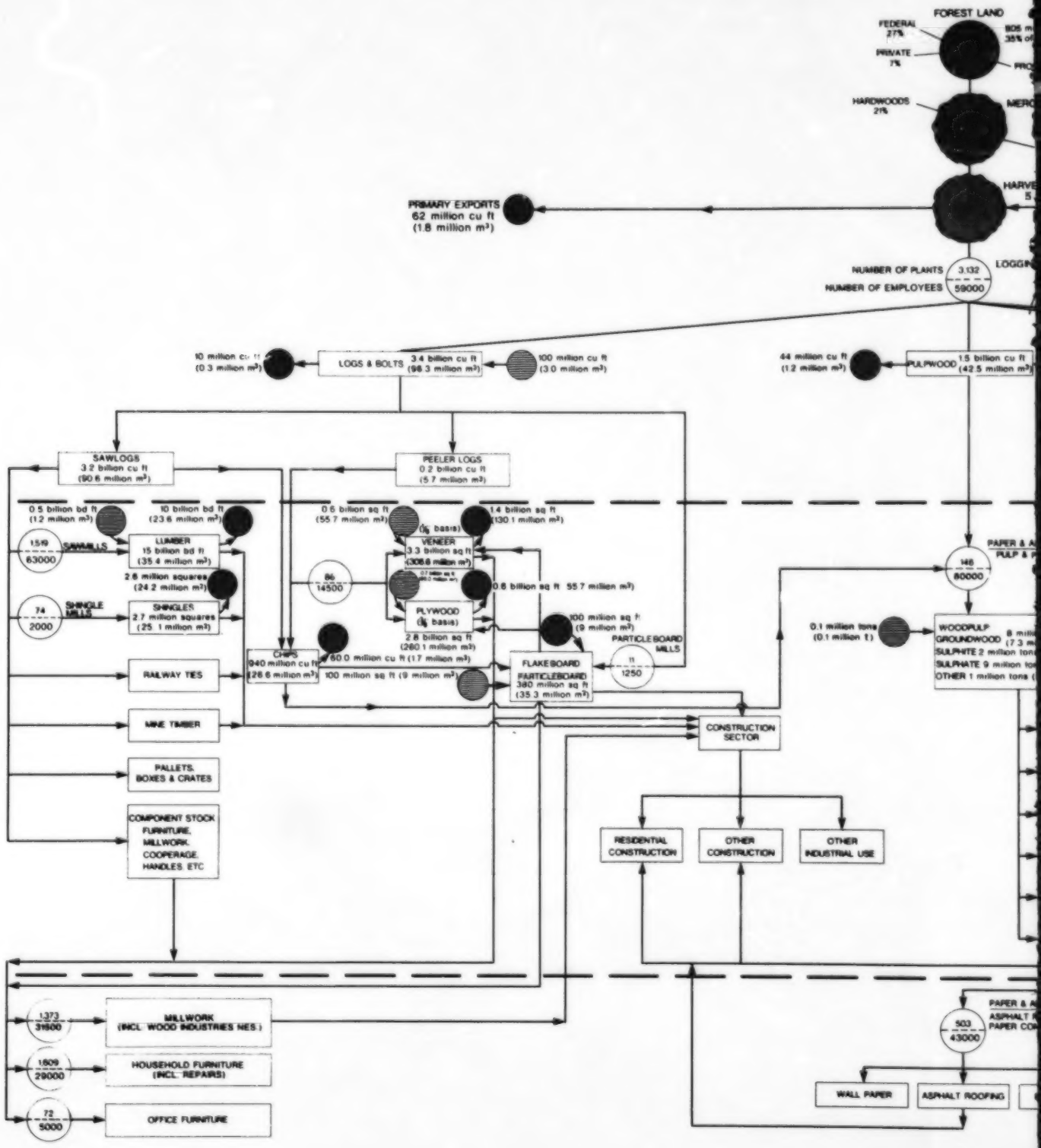
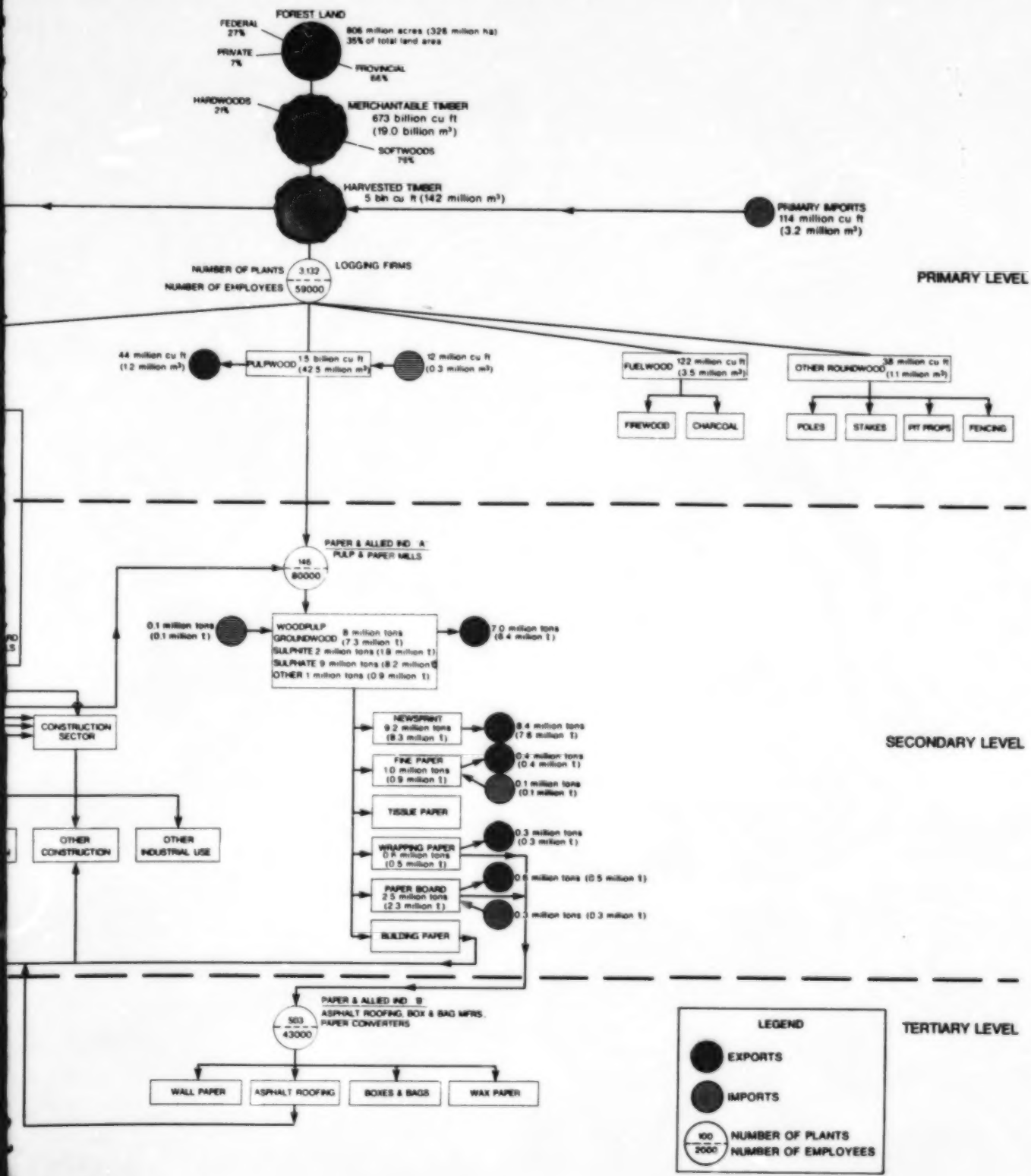


FIGURE 1 END USE OF WOOD PRODUCTS, CANADA, 1973

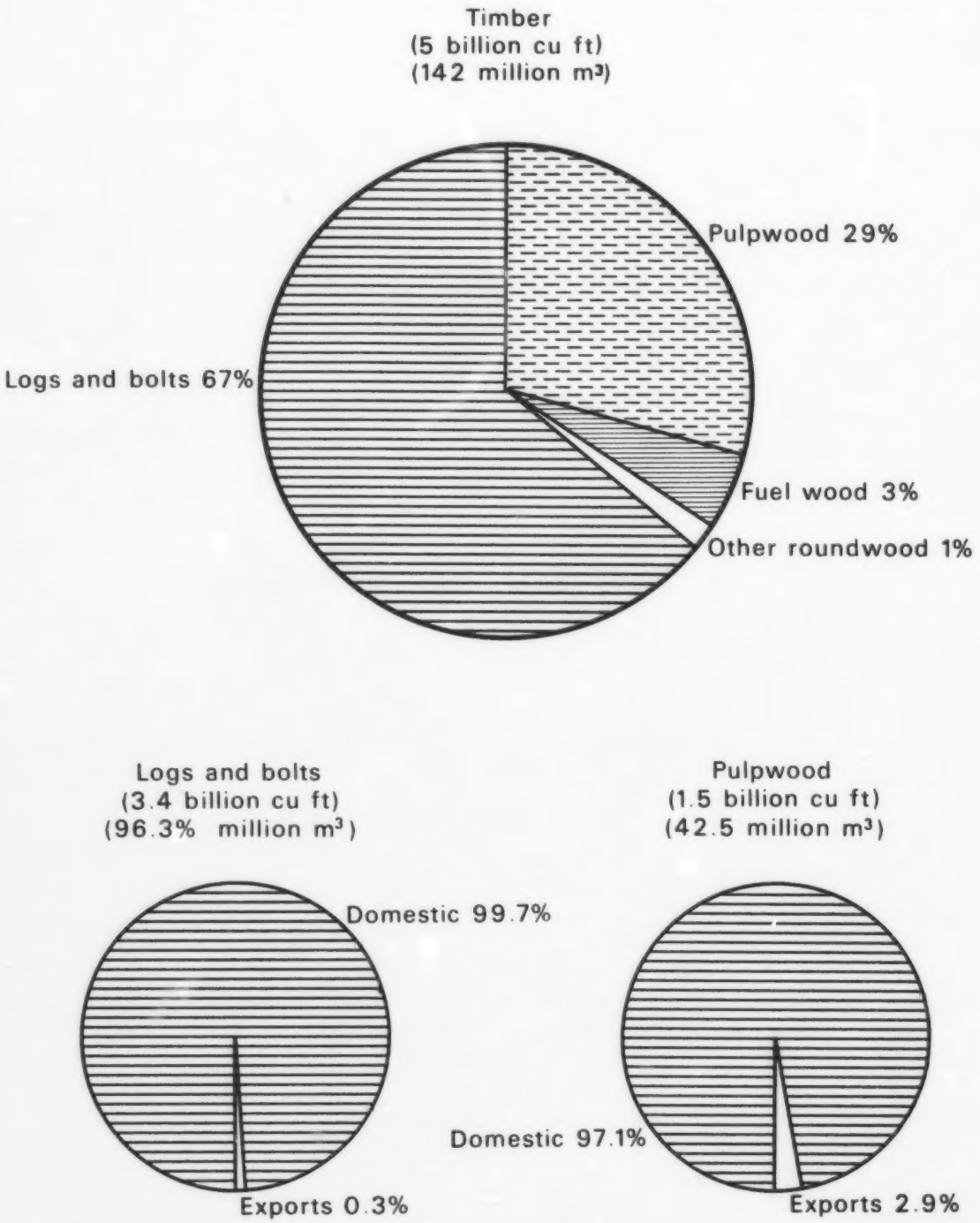


In 1973, a total of 5 billion cubic feet of timber (142 million m^3) was harvested by some 3,100 logging firms employing 59,000 workers. Logs and bolts constituted 67% of the cut timber and pulpwood 29%, while the remaining 4% was fuelwood and other roundwood (poles, stakes, pit props, fencing, etc., Figure 2). In addition, there were 114 million cubic feet (3.2 million m^3) of imports. The USA was the main source, especially of spruce and such hardwoods as maple, birch and walnut. Canadian exports were 62 million cubic feet (1.8 million m^3) composed mostly of western red cedar and western hemlock logs going to Japan, poles and fencing posts to the USA, and pulpwood destined for Europe and the USA. This trade pattern in primary wood products has been fairly consistent over the last few years.

About 95% of all logs and bolts are processed by some 1,600 sawmills and other specialty mills. These employ some 65,000 people and turn out such products as lumber, shingles, ties, mine timber, pallets millwork, cooperage and components stock for furniture. Lumber is by far the most important product in this group, accounting for 94% of sawlog use (Figure 3). Two thirds of this output is exported to the USA, Japan, UK, Australia and other countries, while the remainder is used domestically. The most valuable species exported is western white spruce ($0.5 billion), followed by western hemlock ($0.4 billion), western red cedar ($0.1 billion) and Douglas-fir ($0.1 billion). The small quantity of imported lumber includes oak, Douglas-fir, ponderosa pine and redwood from the USA and mahogany and other exotic species from Brazil, South-East Asia and the USA.

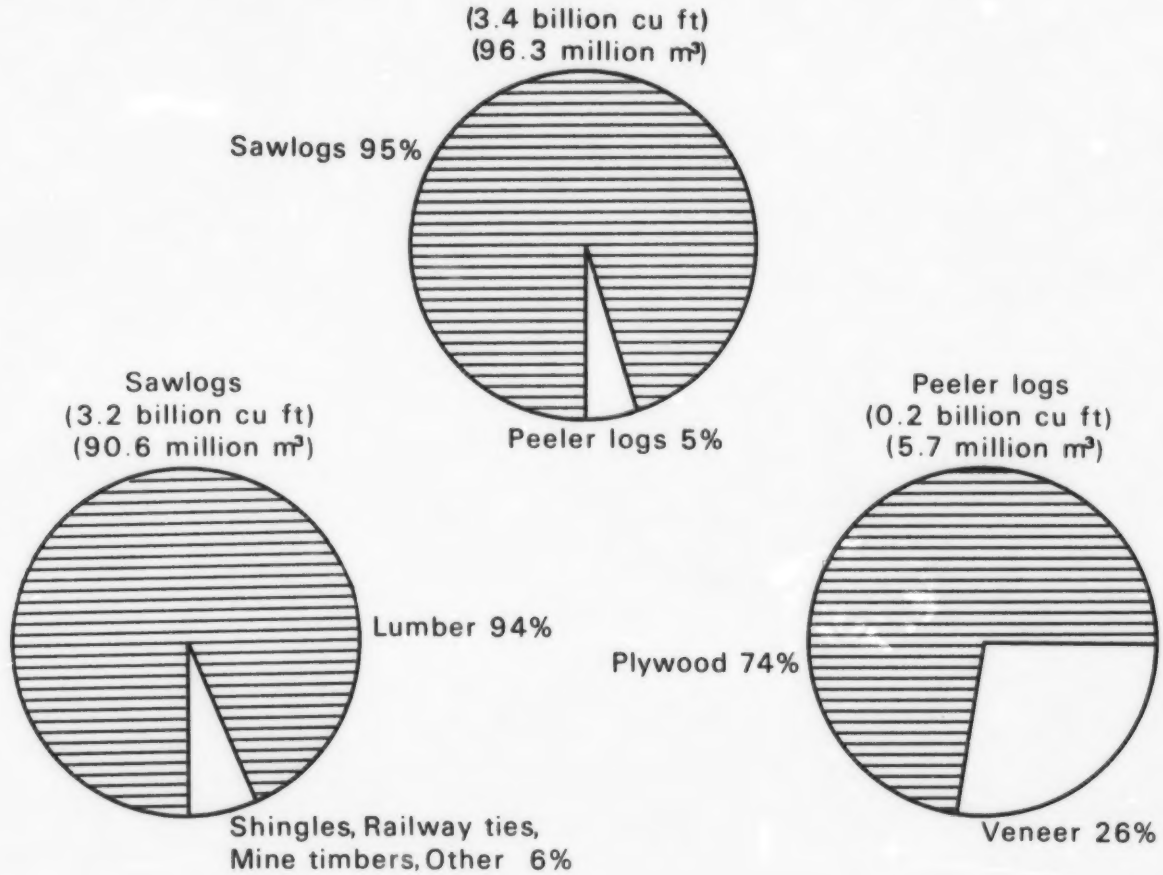
The construction sector is estimated to utilize about one half of the domestic lumber supply, the remainder is divided between the millwork, sawmilling, furniture and other miscellaneous industries, as presented in Figure 4. In the construction sector itself, most lumber is used in the erection of new residential houses and lesser amounts in repairs and nonresidential construction.

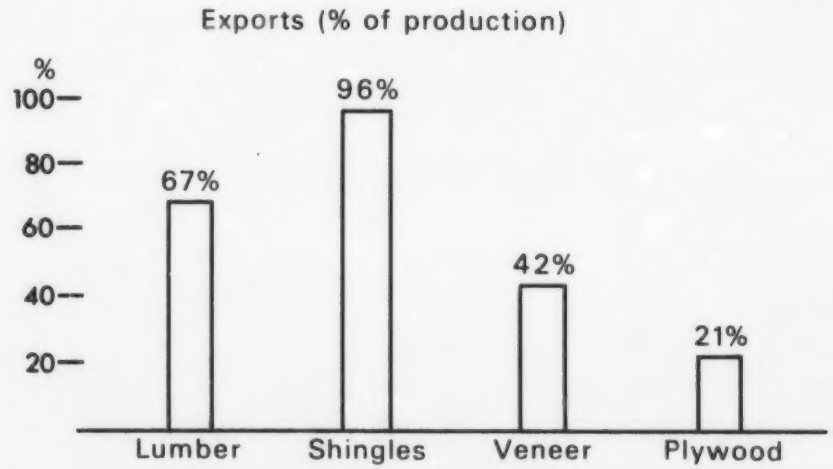
FIGURE 2 UTILIZATION OF HARVESTED TIMBER 1973 (PRIMARY LEVEL)



Source: Statistics Canada and Canadian Forestry Service

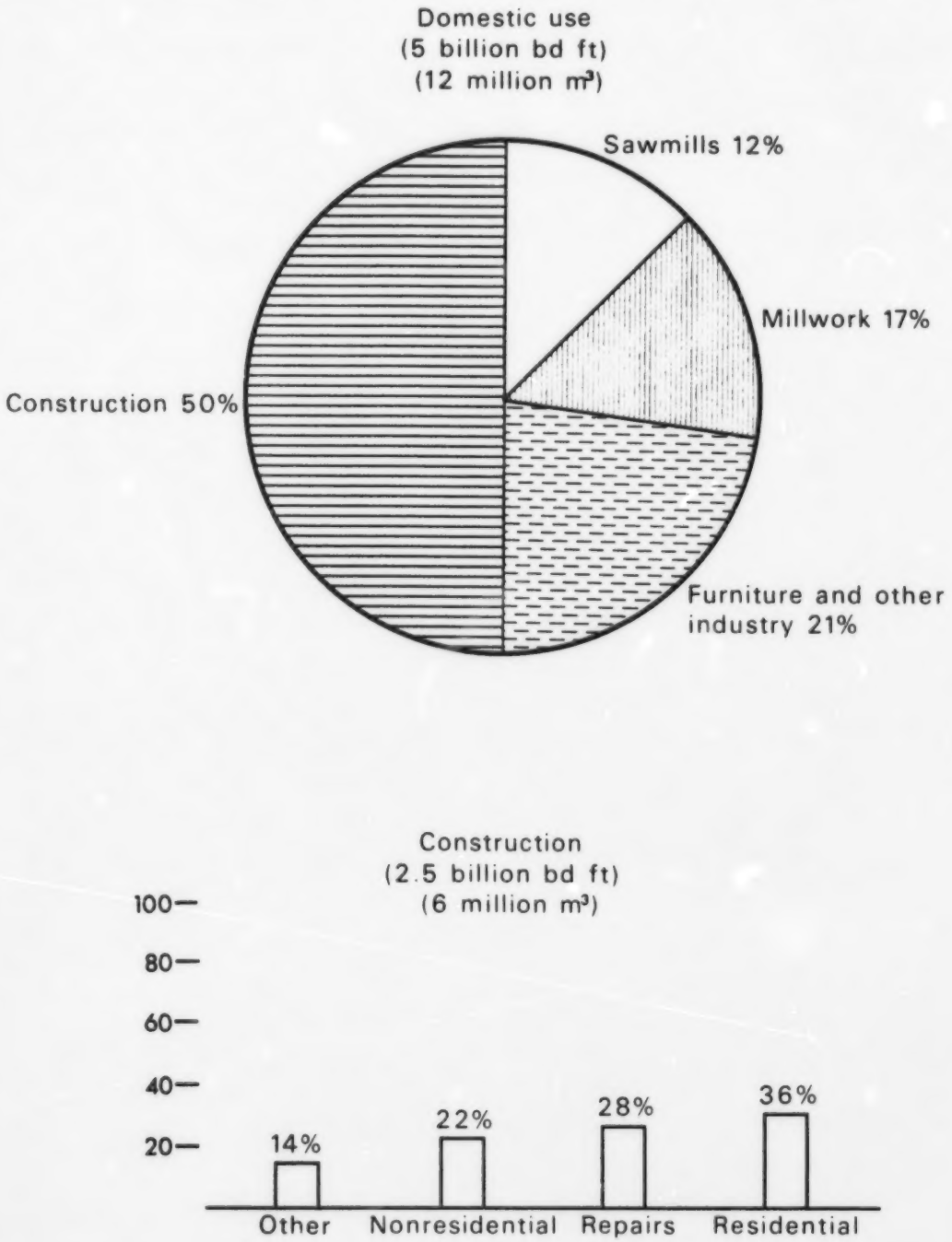
FIGURE 3 UTILIZATION OF LOGS AND BOLTS 1973 (SECONDARY LEVEL)





Source: Satistics Canada and Canadian Forestry Service

FIGURE 4 UTILIZATION OF LUMBER (SECONDARY LEVEL)*



Estimates based on 1961-1971 averages;

*Source: Statistics Canada and Canadian Forestry Service

Most shingles and shakes are manufactured in British Columbia from western red cedar, although some are made in Quebec from eastern white cedar. A large percentage is produced outside the industry proper by owner-operators who use one or two machines, or even produce them manually. Practically all domestic production (96%) is exported to the USA.

The equivalent of 940 million cubic feet of logs (26.6 million m^3) is converted annually from mill residues into chips that are destined mainly for domestic consumption by the pulp and paper industry. Only about 60 million cubic feet (1.7 million m^3) is exported.

Some 5% of the annual harvest of logs and bolts are utilized in veneer and plywood manufacture. Twenty five percent of these are Douglas-fir logs, although spruce and lodgepole pine are increasingly being used. In 1973, the veneer and plywood industry operated 86 plants and provided employment to some 15,000 workers; production of both veneer and plywood reached 6 billion square feet (557 million m^2). In spite of growing shortages of good quality peeler logs this production level is expected to be maintained or even to increase, depending upon markets. This is mainly due to technological improvements in utilizing logs of smaller diameters and increased usage of wood residue in the core material. One third of the total output is exported (mostly hardwood veneer), the remainder provides inputs into the construction, millwork, and other industries. About one billion square feet (92.9 million m^2) of veneer and plywood are imported, mostly from the USA.

The major end uses of plywood in the construction sector are roof and wall sheathing, subflooring and forms. This market accounts for nearly three quarters of total domestic consumption. The remainder is used in manufacturing furniture, mobile homes and trailers, and various containers. Markets are quite diversified and because of that it is difficult to define precise trends in plywood usage. Aggregate demand

is increasing, but some sectional trends may cancel each other (e.g. declining usage in residential construction and increasing use in mobile homes). The principal importer of Canadian plywood has been the UK, although more recently, exports to other Western European countries have increased significantly.

In Canada, increasing quantities of logs are being converted into various types of particleboard. In 1973, there were 11 plants employing 1,250 workers and producing 380 million square feet (35 million m^2) of the board. In 1977, 18 mills produced 600 million square feet (55.7 million m^2). Between 40% and 45% of particleboard is used in the manufacture of furniture and kitchen cabinets, close to 20% goes into construction, while the remainder is utilized by the manufacturers of mobile homes, prefabricated buildings and doors. Imports are at the 100 million square feet (9 million m^2) level and declining, while exports are of a comparable but increasing volume.

The annual flow of some 1.5 billion cubic feet (42.5 million m^3) of pulpwood, representing about 30% of all timber cut in Canada, keeps 146 pulp and paper mills in operation and 80,000 men and women employed. This wood is converted into 20 million tons (18 million t) of pulp, of which about one third is exported; the remaining 14 million tons, (13 million t) augmented by about 100,000 tons (90,700 t) of imports is used domestically in the manufacture of a wide variety of paper products.

Some products of pulp and paper mills (such as insulating board and hardboard) provide direct inputs into the construction and furniture manufacturing sectors. Other products enter a further stage of transformation as inputs into the paper and allied industries. In this sector they undergo further processing in some 500 plants employing 43,000 workers, and leave as manufactured products like boxes, cartons, bags, containers and various types of converted paper.

In the preceding paragraphs, physical flows of wood were traced through various stages of transformation, starting with harvested timber and ending with highly processed products such as fine paper and furniture. These flows pass through what can conveniently be described as three manufacturing levels: primary, secondary and tertiary, each differentiated by a progressively greater value added factor of labor and capital. Along those paths the flows generate the input-impact sequences, i.e. the chain of events which include the manufacturing process itself and its indirect economic effects.

To simplify the assessment of physical input-impact valuation we can divide wood products into three major groups: (1) round-wood, dimension lumber, millwork, furniture, and other manufactured wood products; (2) veneer, plywood and particleboard and (3) pulp and paper products. In the first group are products whose original wood structure is more or less unchanged, in the second group this structure has been changed somewhat through mechanical means, while in the third group the form has been considerably altered both mechanically and chemically.

Measured in terms of number of plants and employees, the impact of the first wood products group, is by far the largest. This transformation of timber into logs and then into lumber, shingles, ties, boxes and component stock, and then into doors, frames, windows and furniture involves 7,800 plants and keeps almost 200,000 men and women employed. The impact of the second group is much smaller, as the production process engages only about 100 plants and 16,000 workers. The third group which processes pulpwood into pulp, and then into paper products involves about 650 plants and 123,000 employees. The total economic activity generated by the three product groups is measured by the involvement of some 8,500 plants and 340,000 workers in these industries.

The paths and stages of wood product transformation described above and illustrated in Figure 1 are based on 1973 data. They are far from being absolute. To trace out all the product flows from the point of harvest to the point of final consumption would be an impossible task on account of lack of information and the great number of products involved. Furthermore, even in areas where information was available, certain end uses were not considered because wood inputs constituted only a small part of total inputs. In spite of such limitations, it is hoped that this study will make a contribution towards a better understanding of the flows of wood through the economy and the impact these flows create at each end-use point.

PATTERNS OF INDUSTRIAL USE

The first part of this report contained descriptions of the physical flows of wood products from timber harvesting to final end uses, at three different manufacturing levels. In a sense, it was a bird's eye view of what happens to a tree after it has been cut down and before it is absorbed into the vast network of domestic and foreign markets. Principal points of interest here were the direction and size of these aggregate flows and indications of broad end uses.

In this section, attention is centered around the patterns of use of lumber and plywood and their importance to industrial users from 1961 to 1971. The analysis is based on the 1961-66 and 1967-71 Input-Output Tables for Forest Products (Statistics Canada) and expressed in terms of constant (1961) dollars in order to facilitate comparison with aggregate volume flows of the first part of the report. The analysis emphasizes the detection of significant trends in the relative distribution of wood products between various industrial uses, for the 11 year time period studied.

For practical reasons the terms "lumber" and "plywood" will be used throughout this paper, although the background statistics on which the analysis is based include timber with softwood and hardwood lumber, and veneer with softwood and hardwood plywood.

Lumber

Total value of domestic lumber production (including imports) increased from $568 million in 1961 to $810 million in 1971, an increase of 43% or about 4% per year. Between 1961 and 1965 and again between 1967 and 1970 the increase was fairly uniform and rapid, while 1966 and 1969 mark actual decreases from the preceding years (Figure 5). The domestic industrial use of lumber increased slightly during the first four years of the decade, then stabilized at the $300 million level. However, the input flows into specific Canadian construction and manufacturing industries have not followed the same pattern. Exports almost doubled in volume, from $319 million in 1961 to $563 million in 1971, and only two years, 1966 and 1969 showed slight decreases (Figure 6).

Another point of interest is the shift in relative importance of the domestic and export lumber markets, Table 1. At the beginning of the decade, the domestic use was 44% of the total production plus imports, while 56% was exported. At the end of the period the corresponding figures were 35% and 65% respectively, indicating that proportionally more Canadian lumber was being placed on foreign markets. Some less pronounced changes have also occurred in the relative use of lumber in the domestic industrial sector (Table 2).

The flow of lumber was almost evenly divided between the manufacturing and construction sectors at the beginning and towards the end of the study period, but during the middle years (1964 to 1968) more lumber was used in construction. This reflected the cyclical variation in both residential and nonresidential housing. Lumber inputs into the manufacturing sector were more stable over this time period.

Table 1. Domestic* and Export Lumber Markets

(Percent)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Domestic	44	43	41	42	42	43	42	40	39	37	35
Exports	56	57	59	58	58	57	58	60	61	63	65

Table 2. Domestic* Industrial Use of Lumber

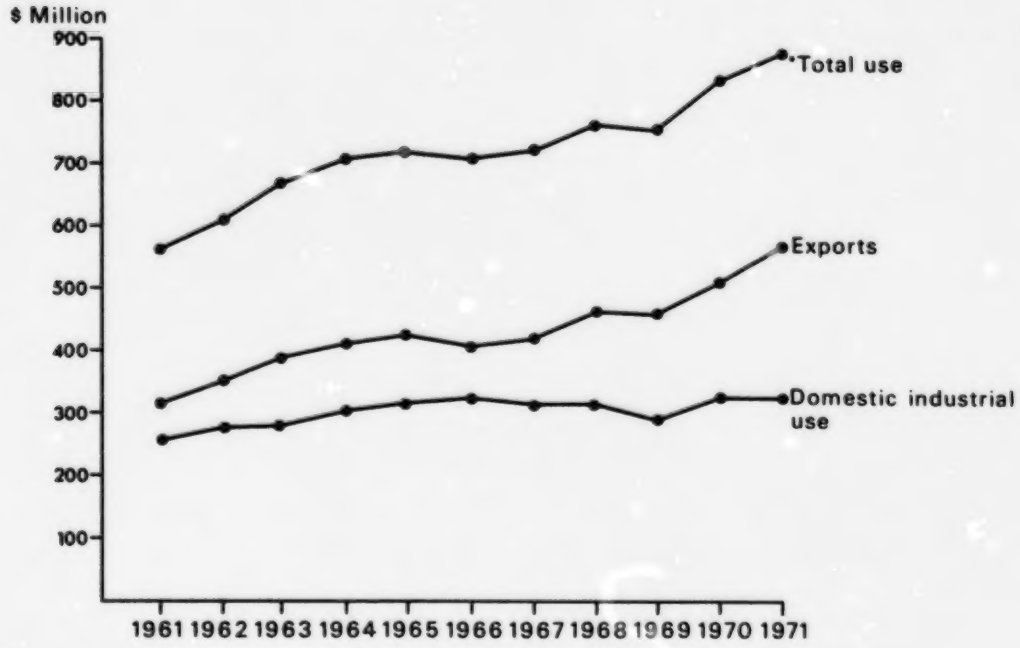
(Percent)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Manufacturing:	52	51	51	49	46	46	46	44	52	54	52
Sawmills	17	19	18	14	11	9	8	8	9	8	9
Millwork	18	15	14	16	15	16	16	16	20	20	19
Furniture	5	5	6	5	6	7	7	6	7	7	7
Other	12	12	13	14	14	14	15	14	16	19	17
Construction:	48	49	49	51	54	54	54	56	48	46	48
Residential	15	15	16	17	19	18	19	22	21	20	20
Repairs	14	15	14	14	13	13	14	17	13	13	13
Nonresidential	12	13	13	12	14	14	13	10	7	7	8
Other	7	6	6	8	8	9	8	7	7	6	7

* Including imports

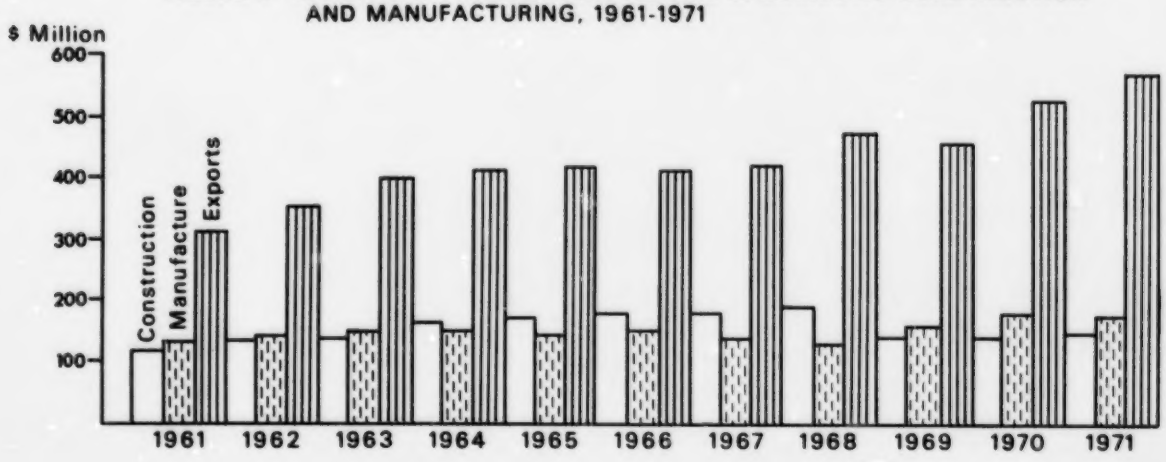
Source: Appendix Table I.

FIGURE 5 END USE OF LUMBER, 1961-1971



*Domestic production plus imports

FIGURE 6 EXPORTS OF LUMBER AND ITS USE IN DOMESTIC CONSTRUCTION AND MANUFACTURING, 1961-1971



Source: Statistics Canada and Canadian Forestry Service

Different flow patterns occurred among the major industrial users of lumber. Sawmills captive consumption was halved both in absolute and relative terms. In the millwork and furniture industries lumber use increased slightly in volume, but their percentage of domestic industrial use changed little. The use of lumber by the truck body and trailer manufacturing industry increased dramatically from $0.9 million in 1961 to $1[illegible]5 million in 1971, and its relative share of domestic industrial use grew from 0.4% to 3.7%. This gain reflects the rapid growth of the industry rather than a greater use of lumber per unit of output.

In the construction sector, the most pronounced increase in lumber demand occurred in the residential building section, climbing from $38 million in 1961 to $61 million in 1971, or in relative terms from 15% to 20% of domestic industrial use. The most important factor influencing this increase was the tremendous surge in the number of apartments and row houses built during the period - the former increasing from 36,000 units in 1961 to 106,000 units in 1971, and the latter from 2,000 to 16,000 units. The potential effect on lumber demand was somewhat tempered by a decrease in the average floor area of the dwellings. The number of single and semi-detached houses and duplexes remained at about the same level.

A reverse trend has occurred in nonresidential construction, where the use of lumber decreased from $32 million in 1961 to $24 million in 1971, or in relative terms from 12% to 8% of domestic industrial use, mainly because of declining building activity. Lumber use in repairs and alterations fluctuated around the $40 million level, although in one particular year it reached the $53 million mark. Lumber inputs into other types of construction (highways, dams and other engineering construction) remained fairly stable throughout the whole period.

Plywood

Total and domestic industrial uses of plywood, measured in constant (1961) dollars showed a trend similar to that of lumber (Figures 7 and 8). Overall consumption (including imports) slowly increased over the period but declined in 1967, 1969 and 1970. Value of exports steadily increased from 1961 to 1968, then towards the end of the period it dropped significantly to pre-1964 levels. However, when expressed as percentages of total production (plus imports), plywood exports stayed near the 25% level throughout the study period (Table 3).

The pattern of end use of plywood changed relatively little during the 11 year period, as shown in Table 4. Construction demand for plywood decreased from 74% of domestic industrial use in 1961 to 68% in 1971, in favour of greater utilization by the manufacturing sector. During the same period there was a general increase in plywood consumption; in manufacturing from $29 million in 1961 to $64 million in 1971 and in construction from $85 million to $140 million.

Within the manufacturing sector, the millwork and furniture sections were conservative users of plywood; their requirements remained relatively stable throughout the study period. The veneer and plywood industry increased its share from 6% to 12%; much of this growth in the captive use of plywood was most likely caused by between-plant material transfers.

In the residential building section of the construction industry, plywood consumption varied erratically from year to year. The use of plywood for household repairs and alterations steadily declined, from 23% to 11%, probably as a result of a chipboard substitution effect, while consumption in nonresidential and other types of construction remained at a relatively stable level.

Table 3. Domestic* and Export Plywood Markets

(Percent)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Domestic	78	76	75	73	74	74	73	74	78	76	80
Exports	22	24	25	27	26	26	27	26	22	24	20

Table 4. Domestic Industrial Use of Plywood

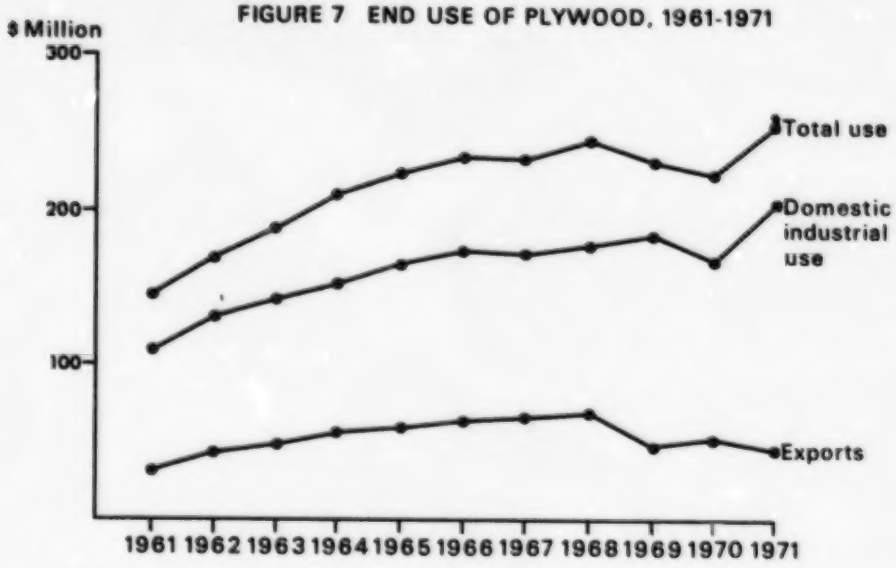
(Percent)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Manufacturing:	25	26	26	27	29	31	36	35	35	37	32
Veneer & Plywood	6	6	7	6	9	9	13	13	13	13	12
Millwork	8	9	8	9	8	10	10	10	10	10	9
Furniture	5	6	6	6	6	5	5	4	4	4	3
Other	6	5	5	6	6	7	8	8	8	10	8
Construction:	75	74	74	73	71	69	64	65	65	63	68
Residential	41	37	42	45	44	41	34	41	44	39	48
Repairs	23	23	21	18	17	15	19	15	12	13	11
Nonresidential	10	12	10	9	9	11	10	8	8	10	8
Other	1	2	1	1	1	1	1	1	1	1	1

* Including imports

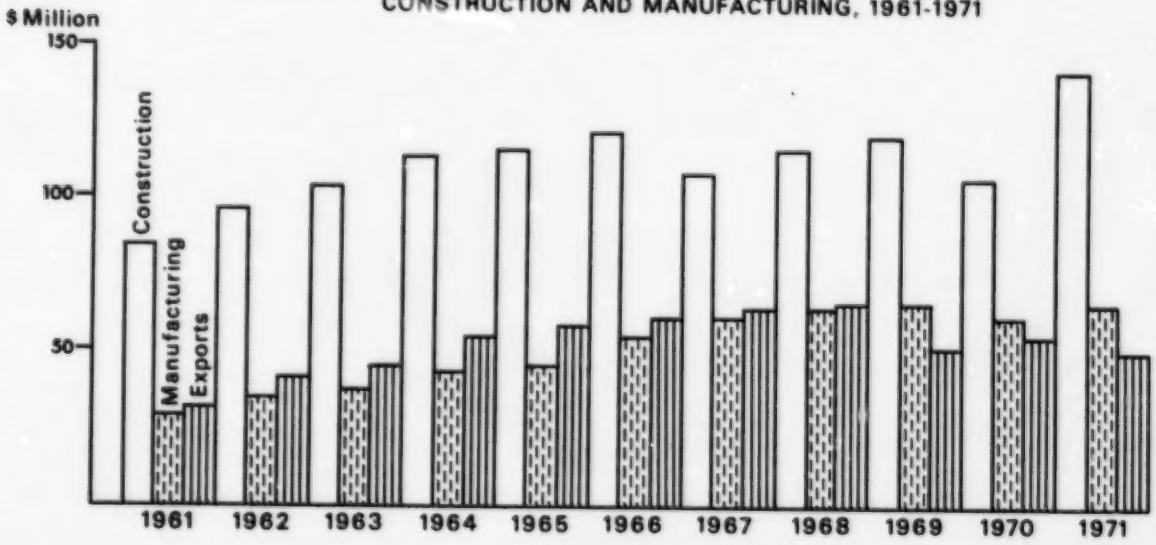
Source: Appendix Table II

FIGURE 7 END USE OF PLYWOOD, 1961-1971



*Domestic production plus imports

FIGURE 8 EXPORTS OF PLYWOOD AND ITS USE IN DOMESTIC CONSTRUCTION AND MANUFACTURING, 1961-1971



Source: Statistics Canada and Canadian Forestry Service

CONCLUSION

This study reveals a trend towards increased domestic consumption and exports of the two major wood products, lumber and plywood, (measured in 1961 dollars) throughout the period under review. Slight decreases were noted for lumber in 1966 and 1969 and for plywood in 1967, 1969 and 1970. These movements reflected changes in domestic and foreign market requirements.

Exports were very important to the lumber industry, especially towards the end of the study period. In fact, fluctuations in overall lumber demand closely reflected market conditions abroad, particularly in the USA.

On the average, 51% of domestically available lumber was utilized by the construction sector and 49% by manufacturing industries, although there were small annual variations. Interestingly enough, these figures do not appear to correlate with the general activity in construction as strongly as similar statistics for the residential building section. It could be that the time period considered was not long enough to expose cyclical effects, or simply, that when comparing such aggregate series, some component series were self-cancelling.

Behaviour of the domestic and the export plywood markets was quite different. Not only was a much smaller percentage of plywood exported, but also fluctuations in export volumes were more erratic, especially when compared to those of lumber. Most of the plywood was utilized domestically; this market absorbed 75 to 80% of total production supplemented by imports. Imports were substantial: they increased from 12% to 16% of the total marketed supply of plywood, and their value jumped from $17 million in 1961 to $36 million in 1971. Requirements for plywood by the manufacturing industries grew steadily, while the needs of the construction sector declined, in contrast to the "no change" situation with lumber. Furthermore, plywood utilization in construction has shown some

correlation with housing starts and completion series, which was difficult to detect from the patterns of lumber use.

From the patterns of utilization of lumber and plywood described above, some short-term forecasts can be ventured. End uses of lumber are more likely to follow traditionally established channels, i.e. about even division between manufacturing and construction uses and a very moderate shift towards increased exports. The plywood market will likely show a reduced construction demand and increased use by the manufacturing sector. Imports will level off, as the increasing domestic demand will largely be met by rising production and better utilization of existing capacity. This short-term prediction is conditional on an absence of abrupt fluctuations in the business activity of major wood-using industries.

APPENDIX

TABLE I: END USE OF LUMBER AND TIMBER 1961-1971 ($ 1961)

Domestic Industrial Use	1961 $'000	1961 %	1962 $'000	1962 %	1963 $'000	1963 %
Manufacturing:						
Sawmills	42,834	7.5	50,321	8.2	48,986	7.5
Millwork	44,497	7.8	39,514	6.5	40,034	6.1
Wood Industries (nes**)	9,666	1.7	9,598	1.6	10,087	1.5
Furniture and Fixtures	13,658	2.4	14,034	2.3	15,142	2.3
Truck, Body & Trailer Manufacturing	932	0.2	1,124	0.2	1,231	0.2
Sporting Goods	2,425	0.4	2,664	0.4	2,840	0.4
Miscellaneous Manufacturing Industries	3,185	0.6	3,200	0.5	3,632	0.6
Construction:						
Repair	34,344	6.0	41,150	6.8	38,591	5.9
Residential	38,480	6.8	40,924	6.7	43,739	6.7
Nonresidential	31,608	5.6	34,849	5.7	34,789	5.3
Road & Highway	1,227	0.2	1,580	0.2	1,666	0.3
Dams & Irrigation	2,227	0.4	2,563	0.4	2,414	0.4
Railway & Telephone	7,121	1.3	5,380	0.9	7,206	1.1
Other Engineering Construction	5,838	1.0	7,193	1.2	6,756	1.0
Wholesale Trade	4,673	0.8	5,066	0.8	4,749	0.7
Other Industries (nes**)	11,963	2.1	12,531	2.1	14,571	2.2
Subtotal*	253,746	44.6	270,567	44.4	275,202	42.2
Semidurables	4,204	0.7	5,002	0.8	5,010	0.8
Inventories	28,301	5.0	16,253	2.7	5,262	0.8
Exports	319,383	56.2	354,395	58.2	399,784	61.4
Imports	-37,160	-6.5	-37,070	-6.1	-33,075	-5.2
Subtotal*	314,728	55.4	338,580	55.6	376,081	57.7
Total*	568,474	100.0	609,147	100.0	651,283	100.0

*Percentages may not add up to 100.0
**nes - not elsewhere specified
Source: Statistics Canada (special work)

TABLE I (Continued)

Domestic Industrial Use	1964 $'000	1964 %	1965 $'000	1965 %	1966 $'000	1966 %
Manufacturing:						
Sawmills	43,178	6.1	35,280	5.0	27,884	4.0
Millwork	47,607	6.7	46,634	6.0	48,704	6.9
Wood Industries (nes**)	12,186	1.7	13,474	1.9	14,965	2.1
Furniture and Fixtures	16,152	2.3	17,340	2.5	21,846	3.2
Truck, Body & Trailer Manufacturing	1,383	0.2	1,919	0.3	2,151	0.3
Sporting Goods	3,061	0.4	3,174	0.4	2,235	0.3
Miscellaneous Manufacturing Industries	3,719	0.5	4,165	0.6	3,735	0.5
Construction:						
Repair	43,163	6.1	40,470	5.7	41,720	6.0
Residential	53,211	7.5	57,517	8.0	56,376	8.0
Nonresidential	38,059	5.3	44,252	6.2	43,613	6.2
Road & Highway	2,237	0.3	2,414	0.3	2,608	0.4
Dams & Irrigation	3,141	0.4	3,664	0.5	3,832	0.5
Railway & Telephone	7,594	1.1	7,071	1.0	7,168	1.0
Other Engineering Construction	9,505	1.3	10,112	1.4	11,906	1.7
Wholesale Trade	5,681	0.8	5,278	0.7	5,814	0.8
Other Industries (nes**)	16,555	2.3	16,954	2.4	16,245	2.3
Subtotal*	305,022	42.9	309,712	43.3	310,802	44.3
Semidurables	5,493	0.8	5,948	0.8	6,448	0.9
Inventories	18,397	2.6	14,867	2.1	15,910	2.3
Exports	421,962	59.3	424,708	59.4	406,692	58.0
Imports	-39,054	-5.5	-40,249	-5.6	-38,897	-5.5
Subtotal*	406,798	57.2	405,274	56.7	390,153	55.7
Total*	711,820	100.0	714,992	100.0	700,955	100.0

TABLE I (Continued)

Domestic Industrial Use	1967 $'000	1967 %	1968 $'000	1968 %	1969 $'000	1969 %
Manufacturing:						
Sawmills	23,032	3.3	23,807	3.2	25,368	3.3
Millwork	50,554	7.2	48,315	6.5	58,453	7.7
Wood Industries (nes**)	14,238	2.0	12,375	1.7	13,740	1.8
Furniture and Fixtures	21,621	3.1	19,388	2.6	19,757	2.6
Truck, Body & Trailer Manufacturing	4,141	0.6	5,392	0.7	7,870	1.0
Sporting Goods	3,622	0.5	3,477	0.5	3,622	0.5
Miscellaneous Manufacturing Industries	3,702	0.5	3,539	0.5	4,076	0.5
Construction:						
Repair	44,639	6.4	53,032	7.2	39,504	5.2
Residential	57,923	8.3	66,121	9.0	62,395	8.2
Nonresidential	40,796	5.8	30,786	4.2	20,459	2.7
Road & Highway	2,322	0.3	1,781	0.2	1,801	0.2
Dams & Irrigation	3,014	0.4	2,369	0.3	2,150	0.3
Railway & Telephone	7,100	1.0	6,604	0.9	5,719	0.8
Other Engineering Construction	10,305	1.5	9,665	1.3	8,838	1.2
Wholesale Trade	6,723	1.0	6,504	0.9	6,769	0.9
Other Industries (nes**)	13,672	1.9	13,293	1.8	13,797	1.8
Subtotal*	307,404	44.0	306,448	41.6	294,368	38.7
Semidurables	5,897	0.8	6,011	0.8	7,455	1.0
Inventories	6,877	1.0	-3,618	-0.5	41,044	5.4
Exports	416,608	59.6	463,437	62.9	456,869	60.1
Imports	-37,662	-5.4	-35,654	-4.8	-38,961	-5.1
Subtotal*	391,720	56.0	430,176	58.4	466,407	61.3
Total*	689,124	100.0	736,176	100.0	760,775	100.0

TABLE I (Concluded)

Domestic Industrial Use	1970 $'000	1970 %	1971 $'000	1971 %
Manufacturing:				
Sawmills	24,037	2.9	26,562	3.3
Millwork	60,298	7.4	56,900	7.0
Wood Industries (nes**)	16,695	2.0	14,909	1.8
Furniture and Fixtures	21,910	2.7	20,199	2.5
Truck, Body & Trailer Manufacturing	9,871	1.2	11,295	1.4
Sporting Goods	4,803	0.6	4,781	0.6
Miscellaneous Manufacturing Industries	4,698	0.6	3,849	0.5
Construction:				
Repair	39,840	4.9	40,914	5.1
Residential	62,311	7.6	61,463	7.6
Nonresidential	22,316	2.7	23,812	2.9
Road & Highway	1,967	0.2	2,159	0.3
Dams & Irrigation	2,946	0.3	2,523	0.3
Railway & Telephone	5,020	0.6	5,428	0.7
Other Engineering Construction	7,846	1.0	9,930	1.2
Wholesale Trade	7,805	1.0	7,541	0.9
Other Industries (nes**)	15,896	2.0	14,719	1.8
Subtotal*	308,259	37.8	306,984	37.9
Semidurables	6,384	0.8	5,446	0.7
Inventories	5,073	0.6	-31,128	-3.8
Exports	529,440	65.0	562,890	69.5
Imports	-34,127	-4.2	-34,232	-4.2
Subtotal*	506,770	62.2	502,976	62.1
Total*	815,026	100.0	809,960	100.0

TABLE II: END USE OF VENEER AND PLYWOOD, 1961-1971 ($ 1961)

Domestic Industrial Use	1961 $'000	1961 %	1962 $'000	1962 %	1963 $'000	1963 %
Manufacturing:						
Veneer and Plywood	6,543	4.6	7,645	4.5	9,914	5.3
Millwork	9,201	6.4	11,289	6.6	11,147	6.0
Household Furniture	6,276	4.4	7,684	4.5	7,823	4.2
Other Furniture	2,631	1.8	2,471	1.4	2,590	1.4
Truck, Body & Trailer Manufacturing	250	0.2	303	0.2	360	0.2
Construction:						
Repair	25,816	18.0	30,440	17.9	29,684	16.0
Residential	46,821	32.7	48,909	28.8	58,459	31.5
Nonresidential	10,842	7.6	16,433	9.7	14,723	7.9
Road & Highway	1,212	0.8	1,394	0.8	1,488	0.8
Other Industries (nes**)	4,009	2.8	4,441	2.6	4,716	2.5
Subtotal*	113,601	79.3	131,009	77.2	140,904	76.0
Semidurables	4,790	3.3	5,245	3.1	5,527	3.0
Inventories	9,883	6.9	12,796	7.5	8,916	4.8
Exports	32,012	22.3	40,817	24.0	46,681	25.2
Imports	-16,965	-11.8	-20,058	-11.8	-16,709	-9.0
Subtotal*	29,720	20.7	38,800	22.8	44,415	24.0
Total*	143,321	100.0	169,809	100.0	185,319	100.0

* Percentages may not add up to 100.0
** nes: not elsewhere specified
Source: Statistics Canada (special work)

TABLE II (Continued)

Domestic Industrial Use	1964 $'000	1964 %	1965 $'000	1965 %	1966 $'000	1966 %
Manufacturing:						
Veneer and Plywood	9,728	4.8	13,992	6.5	16,573	7.2
Millwork	14,536	7.2	13,778	6.4	17,272	7.5
Household Furniture	9,304	4.6	9,371	4.4	8,920	3.9
Other Furniture	2,948	1.5	2,960	1.4	3,570	1.5
Truck, Body & Trailer Manufacturing	444	0.2	544	0.3	617	0.3
Construction:						
Repair	27,749	13.7	27,768	12.9	27,230	11.8
Residential	69,959	34.6	71,517	33.3	71,750	31.1
Nonresidential	13,026	6.4	15,192	7.1	19,531	8.5
Road & Highway	1,830	0.9	1,934	0.9	2,146	0.9
Other Industries (nes**)	5,440	2.7	6,437	3.0	7,404	3.2
Subtotal*	154,964	76.7	163,493	76.2	175,013	75.8
Semidurables	5,927	2.9	6,238	2.9	6,878	3.0
Inventories	6,221	3.1	7,099	3.3	12,989	5.6
Exports	57,412	28.4	58,558	27.3	61,156	26.5
Imports	-22,433	-11.1	-20,811	-9.7	-25,234	-10.9
Subtotal*	47,127	23.3	51,084	23.8	55,789	24.2
Total*	202,091	100.0	214,577	100.0	230,802	100.0

TABLE II (Continued)

Domestic Industrial Use	1967 $'000	1967 %	1968 $'000	1968 %	1969 $'000	1969 %
Manufacturing:						
Veneer and Plywood	19,862	9.3	23,596	10.8	24,249	11.1
Millwork	17,792	8.3	17,181	7.9	17,935	8.2
Household Furniture	8,147	3.8	7,880	3.6	7,726	3.5
Other Furniture	4,821	2.2	4,609	2.1	4,447	2.1
Truck, Body & Trailer Manufacturing	772	0.4	902	0.4	1,131	0.5
Construction:						
Repair	31,801	14.8	26,109	12.0	22,310	10.2
Residential	57,986	27.1	73,448	33.7	80,623	37.0
Nonresidential	17,420	8.1	14,902	6.9	14,406	6.6
Road & Highway	1,906	0.9	1,581	0.7	1,597	0.7
Other Industries (nes**)	8,678	4.0	8,735	4.0	9,369	4.3
Subtotal*	169,185	79.0	178,943	82.2	183,793	84.3
Semidurables	5,551	2.6	5,513	2.5	6,079	2.8
Inventories	5,417	2.5	-1,229	-0.6	17,225	7.9
Exports	62,558	29.2	64,362	29.6	51,429	23.6
Imports	-28,448	-13.3	-29,884	-13.7	-40,624	-18.6
Subtotal*	45,078	21.0	38,760	17.8	34,109	15.7
Total*	214,263	100.0	217,703	100.0	217,902	100.0

TABLE II (Concluded)

Domestic Industrial Use	1970 $'000	1970 %	1971 $'000	1971 %
Manufacturing:				
Veneer and Plywood	22,290	10.9	23,795	10.9
Millwork	15,854	7.7	17,870	8.2
Household Furniture	7,242	3.5	6,932	3.2
Other Furniture	4,277	2.1	4,045	1.8
Truck, Body & Trailer Manufacturing	1,208	0.6	1,625	0.7
Construction:				
Repair	22,376	10.9	23,032	10.5
Residential	65,786	32.1	98,744	45.1
Nonresidential	16,105	7.8	15,771	7.2
Road & Highway	1,640	0.8	1,949	0.9
Other Industries (nes**)	10,290	5.1	9,451	4.3
Subtotal*	167,290	81.5	203,214	92.8
Semidurables	5,913	2.9	6,083	2.8
Inventories	7,403	3.6	-5,141	-2.3
Exports	54,015	26.3	50,465	23.0
Imports	-29,447	-14.4	-35,711	-16.3
Subtotal*	37,884	18.5	15,696	7.2
Total*	205,175	100.0	218,910	100.0